SYNOPSIS OF SAVINGS

Bently Nevada systems don't cost . . . they pay

A gas processing facility in the Middle East noticed a change in 1X vibration values of a compressor rotor, based on information provided by a Bently Nevada machinery management system. Comparison to historical data from an earlier incident helped the customer conclude that the vibration was due to a change in balance condition caused by loss of metal from one stage of the rotor. A new rotor was required, but no spare rotor was immediately available. Since the Bently Nevada system provided the customer with a good understanding of the machine's condition, the Engineers were able to control the severity of the problem by reducing production through the compressor while a new rotor was manufactured. **Had the machine failed, complete loss of production would have resulted in lost revenues, which were estimated at USD 2,000,000 per day.**

Using Bently Nevada machinery management software, a chemical facility in the UK experienced two significant saves. In one instance, electrostatic discharge on a bearing was detected using a shaft centerline plot. A broken earth strap was the cause. **The detection saved two days that would have been needed to change out the bearing. The lost production was worth an estimated USD 3,000,000.** In another case, when oil whirl was detected on a machine's bearing, the bearing was changed. Some people at the facility wanted to change an identical adjacent bearing; however, the Bently Nevada software diagnosed it as being OK. **By leaving the bearing in place, the customer saved USD 65,000.**

A French refinery experienced a decrease in vibration levels on one bearing on a Fluid Catalytic Cracker expander. The orbit/timebase plots from the Bently Nevada machinery management system indicated a much more elliptical shaft motion than during the previous year's startup. Moreover, the 1X vibration phase and amplitude were not stable, and the precession changed from forward to reverse. A rub was suspected, either inside the casing or in the seals. Catalyst was seen escaping the seal areas, and the potential for build-up inside the casing was evident. Based on the available information, the machine manufacturer and the end-user decided to shrink the casing over the rotor to eliminate the catalyst buildup. This was done by water injection in the expander inlet with the machine still in operation, decreasing the temperature by 200° C (360° F). Subsequent vibration measurements were similar to what they had been the previous year. By resolving the situation online, **the refinery was able to prevent lost production valued at around FF 1,000,000 per day.**

A U.S. petrochemical facility experienced **two turbine generator saves worth an estimated USD 1,500,000 to 2,000,000.** The first incident was the result of an incorrect startup procedure. The unit had been shut down for three months and was started up too quickly, before the bow was worked out of the shaft. This resulted in a reverse whirl. The unit was tripped by the Bently Nevada machinery protection system. The Bently Nevada machinery management system was then used to show exactly what happened, and the procedure for startup of the unit was changed to avoid similar occurrences. A separate incident happened the next day, when a unit went into oil whirl. Operating conditions were changed, and the unit was kept online.

A South Korean petrochemical plant experienced a sudden power failure, due to a storm, causing a major plant shutdown. Upon startup of the plant, the customer noticed high vibration on one of the blowers, as indicated by the Trendmaster® 2000 System. A subsequent analysis of the machinery data revealed that a rolling element bearing failure was the most probable cause of the high vibration. Inspection later confirmed the severe bearing damage, and the bearing was replaced. **This machine save prevented a possible loss of USD 500,000 had the failure gone undetected.**